Methods and Guidance for Assessing

Evidence to Classify Species as Potential SCC

Initial List of Potential Species of Conservation Concern (PSCC)

The Salmon-Challis has completed an initial survey for species occurring on the Forest using elemental occurrence data in the Idaho Fish and Wildlife Information System, USFS Natural Resources Information System, and the Global Biodiversity Information Facility databases. Existing conservation assessments were then reviewed to determine species must and should be considered as species of conservation concern based on USFS direction. These information have been compiled in spreadsheets that will be provided to the contractor.

Detailed Assessments Using USFS Template

The USFS will provide the contractor a template for completing assessments of the plants and animals in the initial list of PSCC. The template will be used by the Contractor to document the status of the species based on science and to make a recommendation to the USFS on whether or not to classify the species as PSCC. The following provides guidance in completing this work.

Historical Occurrences

There are species in the initial list of PSCC for which we only have elemental occurrences predating 1990. The question remains as to whether these species are still extant on the Forest. In these cases, a weight of evidence approach is required. The reviewer must ask themselves whether the available evidence suggests the species still occurs in the plan area or not. At a minimum consider the following in making a determination:

- The number of years the species was observed,
- How many individuals were observed,
- The distribution of observations,
- Recent observations near, but off the Forest,
- Taxa detection probability,
- Level of survey effort for the taxa, and
- The current quality of habitat on and off the Forest.

Substantial Concern Assessment

There are 8 criteria (reflecting the 13 evaluation factors outlined in the Directives) in the template that provide a framework to evaluate the status of species based on science. Each criterion was examined to develop a scientific argument for or against naming a species as a potential SCC on the Salmon-Challis N.F. Below we describe each of the 8 criteria to be used in the evaluation along with the associated cross-walk to the newly published 13 factors described in 1909.12.53 (shown in brackets). Note that Factor 1 – current taxonomy – is addressed in the naming convention for each species evaluated. Factor

13, if relevant, is addressed in the overall summary for the species evaluated. Neither Factors 1 nor 13 were specifically addressed in the 8 criteria below.

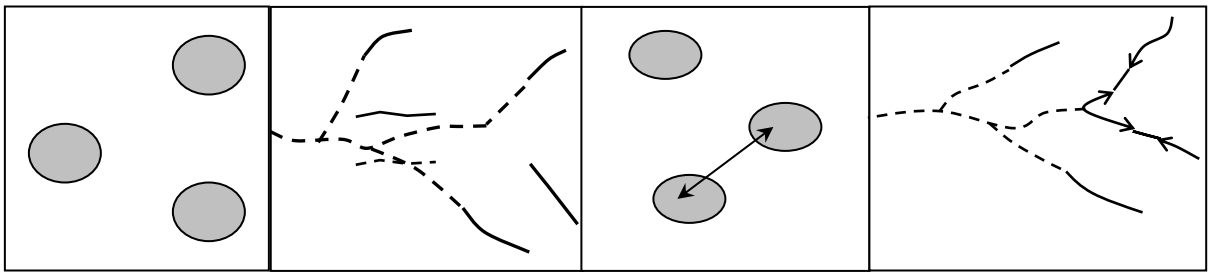
1. Geographic distribution within the Salmon-Challis N.F.[Factor 2];
2. Geographic distribution outside the Salmon-Challis N.F. [Factor 2];
3. Capability of the species to disperse [Factors 4, 5 & 8];
4. Abundance of the species in the Salmon-Challis N.F. [Factor 3];
5. Population trend in the Salmon-Challis N.F. [Factor 4];
6. Habitat trend in the Salmon-Challis N.F. [Factors 6, 7 and 8];
7. Vulnerability of habitats in the Salmon-Challis N.F. to modification as a result of land management activities currently implemented or proposed for implementation; and [Factors 10, 11, & 12]
8. Life history and demographic characteristics of the species [Factors 9].

1. **Geographic distribution within the Salmon-Challis**. Species that are present in only a few locations within the Salmon-Challis may have a higher risk of extirpation, than those that have a broad distribution. Species with restricted distribution and limited interchange of individuals between populations may be more vulnerable to events (such as: disease, storms) that cause extirpation. Similarly, species associated with geographically limited habitats may be more extinction prone. If the current distribution pattern differs significantly from historical distribution, this change should be considered in evaluating the influence of geographic distribution on species persistence.

Rankings for geographic distribution within the Salmon-Challis National Forest:

A = Scarce OR isolated. If a population or habitat meets any of the following conditions:

1. Habitat is scarce throughout the Forest, indicating strong potential for extirpations, and little likelihood of recolonization. or,
2. Habitat or population connectivity is limited due to factors such as environmental gradients, introduced species, disease, habitat loss, or habitat degradation. Dispersal among patches is limited or not possible. or,
3. Habitat is naturally distributed as isolated patches, with limited opportunity for dispersal among patches. Some local populations may be extirpated and rates of recolonization will likely be slow. or,
4. Pictorially if populations or habitat look like any of the following:

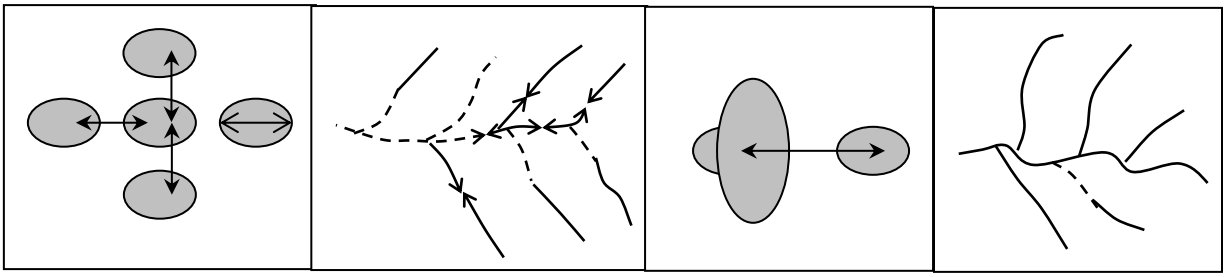


B = Patchy OR gaps. If a population or habitat meets any of the following conditions:

1. Habitat exists primarily as patches, some of which are small or isolated to the degree that species interactions are limited by movements between patches. Local sub-populations in

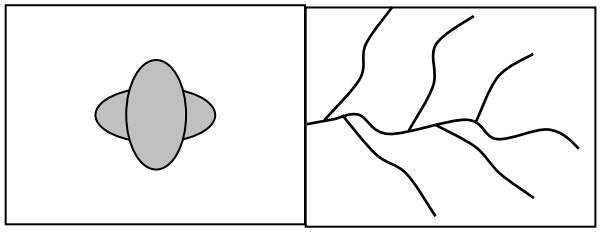
most of the species' range interact as a metapopulation[1] or patchy population, but some patches are so disjunct that sub-populations in those patches are essentially isolated from other populations, or,

2. Habitat is broadly distributed across the planning area but gaps exist within this distribution. Disjunct patches of habitat are typically large enough and close enough together to other patches to permit dispersal among patches and to allow species to interact as a metapopulation, or,
3. Pictorially if populations or habitat look like any of the following:



C = Contiguous. If a population or habitat meets the following conditions:

1. Habitat is broadly distributed across the Forest with opportunity for continuous or nearly continuous occupation by species, little or no limitation on interaction among populations, or,
2. Pictorially if populations or habitat look like either of the following:



D = Insufficient information to draw inferences about criterion.

2. Geographic distribution outside of the Salmon-Challis National Forest. Species (or subspecies/varieties) that occur only in the Salmon-Challis warrant a higher level of concern. A species (or subspecies/variety) that is mostly restricted to the Salmon-Challis with a limited distribution outside of the Forest would have a moderate level of concern. The risk of extinction associated with activities in the Salmon-Challis can be moderated by the potential for recolonization from populations existing elsewhere, although low recruitment from outside populations would reduce effectiveness of the rescue effect. A species with wide distribution outside the Salmon-Challis would generally have a substantially reduced risk as a result of activities in the Salmon-

[1] Many spatially structured populations will not function as metapopulations. (The degree to which a particular species occurs as a metapopulation, or several, in the Forest will be unknown for most taxa).

Challis. It is important to keep in mind that the Salmon-Challis is a huge National Forest and therefore this criterion is less important than in some other National Forest System settings.

Rankings for geographic distribution outside the Salmon-Challis National Forest:

A = Only within the boundaries of the Salmon-Challis National Forest (local or regional endemics).

B = Limited distribution outside the Salmon-Challis National Forest, or widely disjunct taxa for which the main distribution is a significant distance from the Salmon-Challis N.F.

C = Wide distribution outside the Salmon-Challis National Forest.

D = Insufficient information to draw inferences about criterion.

3. Capability of the species to disperse. Dispersal of individuals from a population may be limited because a species has low mobility or because barriers to dispersal exist. Species that do not disperse readily across large areas of unsuitable habitat may be at greater risk of extinction than species that disperse readily across a variety of habitats. Movements of aquatic species may be limited by barriers such as malfunctioning culverts, impoundments, or discontinuous stream networks. The ability of plants to disperse can depend on propagule dispersal agents and reproductive biology. Species that are mobile and for which dispersal is not limited will be assigned a value of no concern. Species that are able to disperse only within suitable habitat will be assigned a moderate level of concern. Species for which dispersal is limited by behavioral patterns or physical capability will be assigned a high level of concern.

In evaluating this criterion, the importance of dispersal to the life history of the species will be considered. For instance, dispersal is a critical characteristic of the life history of species that occupy ephemeral habitats or that occur early in succession after disturbance. In contrast, dispersal plays a less significant role in the population dynamics of some species that occupy stable habitats (such as cave-dwelling insects).

Rankings for capability to disperse:

A = Very limited dispersal ability (restricted dispersal capability coupled with ephemeral habitats).

B = Disperses only through suitable habitat (dispersal areas may or may not be corridors).

C = Readily disperses across landscapes with few habitat-related limitations.

D = Insufficient information to draw inferences about criterion.

4. Abundance (estimated number of individuals or populations) of the species on the Salmon-Challis. Population density or abundance is a primary factor in determining whether a species will persist following habitat loss. Generally, a lower abundance or density may increase the risk of extinction. Rankings will be based on categorical estimates of abundance relative to the expected abundance of that species in good habitat. This approach avoids problems associated with using population estimates or abundance estimates

for widely diverse species. Base ranking on overall condition, but rationale should draw any contrasts between abundance on NFS lands vs. other ownerships.

Rankings for abundance on the Salmon-Challis National Forest:

A = Rare - current abundance is low enough that stochastic and other factors could lead to potential imperilment.

B = Uncommon - current abundance is large enough that demographic stochasticity is not likely to lead to rapid local extinction, but, in combination with highly variable environmental factors, could pose a threat.

C = Common – current abundance is large enough that species persistence is not threatened by demographic stochasticity in combination with environmental variation.

D = Insufficient information to draw inferences about criterion.

5. Population trend in the Salmon-Challis N.F. Another primary factor indicating that persistence may be a concern is a long-term downward trend in population size. A consistently declining population is of concern even if current population size is large, although short-term declines should be interpreted cautiously due to inherent variability in populations and population structure.

An example may be snowshoe hares which have population highs and lows over about a 10 - 15 year period. For species with cyclic or irruptive population patterns three or more cycles may need to be considered before a population trend can be established. Results of local and national monitoring programs may be used to assign values for this criterion.

Rankings for population trend in the Salmon-Challis N.F.:

A = Significant downward or suspected downward population trend.

B = Stable population.

C = Upward population trend.

D = Insufficient information to draw inferences about criterion.

6. Habitat trend in the Salmon-Challis N.F. Another primary factor indicating that viability may be at risk is a persistent downward trend in habitat quality or quantity. Trends in quantity and/or quality of a species' habitat can often be indicative of population trends, if actual species trend data are unavailable. Base ranking on overall condition, but rationale should draw any contrasts between abundance on NFS lands vs. other ownerships. Terrestrial, aquatic, wetland, and riparian ecosystem assessments may provide insights into habitat trends.

Rankings for habitat trend in the Salmon-Challis N.F.:

A = Decline in habitat quality or quantity.

B = Stable amounts of suitable or potential habitat, relatively unchanged habitat quality.

C = Improving habitat quality or increasing amounts of suitable or potential habitat.

D = Insufficient information to draw inferences about criterion.

7. Vulnerability of habitats and populations on the Salmon-Challis N.F. Human-caused modifications of habitat in the Salmon-Challis N.F. include energy development, recreation management, vegetation management, mining, water diversions, road construction, and other stressors. Ecosystem assessments may be useful in providing insights into natural patterns and dynamics of ecosystems, the processes that influence current habitat conditions, and the degree to which management actions result in patterns similar to natural disturbances and how those patterns relate to the natural range of variation (NRV). This criterion will evaluate recent and potential effects of habitat modification (in the broadest sense of all environmental conditions) on wildlife and plant species. In addition, this criteria will consider vulnerabilities that do not relate directly to 'habitat' but could become a limiting factor, stressor, or threat to the population, such as harvest or direct mortality of individuals. Base ranking on overall extent of habitat modifications and resiliency to modification AND on the spatial and temporal extent of any threat to the population.

Rankings for vulnerability of habitats in the Salmon-Challis N.F.:

A = Substantial modification of habitat has occurred or is anticipated with conditions departing from expectations based on NRV, and/or habitat is impacted by modern stressors such as herbicides, nonnative invasive species, water diversions, recreation, etc.

B = Habitat modification is likely to result in ecological patterns similar to the range of historical conditions, but is being impacted by modern stressors.

C = Habitat resilient, changes are similar in frequency and intensity to those expected from NRV, and modern stressors not significant.

D = Insufficient information to draw inferences about criterion.

8. Life history and demographic characteristics of the species. Life history factors such as reproductive rate, relationship with disease organisms, interaction with mutualists or symbionts, food web dynamics, relationship with predators, or relationship with competitors, can affect population size and ability to rebound from stochastic or human-caused population reductions.

For vertebrates, examples of characteristics that might affect viability risk include: number of reproductive cycles/year, average number of young produced/breeding cycle, minimum age of first reproduction, age specific survival rates, and social organization.

Life history characteristics that affect viability in plants include lifespan and variation in life span of individuals (such as: annual vs. perennial), seed dispersal strategy, variation in germination rates, relationship with pollination agents, and susceptibility to herbivory. Annual variation in vital rates can also be important.

Species with strong mutualistic relationships, with low reproductive rates and which are highly susceptible to negative effects of disease, predation, or competition may have less ability to recover from population declines. Those species will be assigned a high level of concern. Species with higher reproductive rates have a greater ability to recover from losses caused by predation, disease, or competition however life-cycle analysis may be necessary to evaluate the extent to which reproduction vs. age-specific mortality influences population growth. Viability risk is also higher for populations depressed by introduced diseases or competitors, or that are susceptible to genetic introgression or inbreeding.

Rankings for life history and demographic characteristics:

A = Low reproductive rate **and** high mortality (such as: susceptible to disease, predation, or competition); OR life history characteristics that suggest populations may not recover rapidly from disturbance events or other demographic risk factors are of concern.

B = Low reproductive rate **or** high mortality (e.g., susceptible to disease, predation, or competition), but not both; OR life history characteristics that suggest populations have an intermediate ability to recover from disturbance events and no other demographic risk factors are known. Temper conclusions based on life-cycle considerations and whether population growth is likely to be more sensitive to changes in reproduction or age-specific mortality.

C = High reproductive rate **and** not especially susceptible to disease, predation, or competition; OR species has life history characteristics that suggest populations will have a high ability to recover from disturbance events and no other demographic risk factors are known.

D = Insufficient information to draw inferences about criterion.

Citations:

USDA Forest Service, Rocky Mountain Region, 2003. Sensitive species program: 2003 update of the Species List. Unpublished Report. USDA Forest Service, Rocky Mountain Region.

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